HD

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,866	03/04/2005	Cornelis Antonie Maria Jaspers	NL 020813	5399

24737 7590 02/06/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
HSU, AMY R	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
02/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,866	JASPERS, CORNELIS ANTONIE MARIA	
	Examiner	Art Unit	
	Amy Hsu	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *19-29 and 32-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/4/05,11/9/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In response to election restriction requirement, applicant elects to prosecute claims 1-18, 30-31 in correspondence dated 11/16/2007.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 31 is rejected under 35 U. S. C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 31 defines a computer program *storable* on a medium readable by a computer system. However, "storable" is not definite, and therefore the claim lacks a computer readable medium that stores a computer program with the stated limitations.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7, 10, 12-18, 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai et al. (US 6141047).

Regarding Claim 1, Kawai teaches a method of signal reconstruction comprising a dynamic range control processing (*Col 1 Lines 13-14 teaches an apparatus and inherently the method associated of controlling the dynamic range as applied to an image pickup device)* of an input signal of an image to generate an output signal of the image (*Fig. 2A shows the input and output signals)*, the method comprising the steps of: providing the input signal (*Fig. 2A shows a 12 bit signal which is the input signal)*; determining an amount by: specifying an input range of the input signal, and specifying an output range of the output signal (*Fig. 2B shows a range is specified for the input and output signals, 12 bit and 8 bit respectively)*, selecting a convex function as a non-linear transfer characteristic capable of compressing the input signal (*Fig. 2B shows an example of one convex function as a non-linear characteristic that can be selected)* according to the amount of dynamic range control processing (*Fig. 2A the reference number 8, the knee circuit with the convex function takes input from various circuits that control dynamic range)*; processing the input signal wherein the input signal is transferred by means of the convex function (*Fig. 2A shows the input is put through the*

gamma correction and knee circuit which is transferred by means of the convex function within the knee circuit shown in Fig. 2B); generating the output signal as a result of the processing (*Figs. 2A and B show the output which is the result of processing through reference number 9).*

Regarding Claim 2, Kawai teaches the method according to claim 1, characterized in that at least a peak value (*Fig. 2A reference number 10 the evaluation means, is capable of finding a peak value, Col 6 Line 18)* and/or an exposure average value taken from the signal is used to determine the input range and/or the output range (*Col 8 Lines 34-45 teaches the evaluation means information is used for controlling characteristics including N bit and M bit, which are the ranges of the input and output signal)*, in particular taken by measurement and/or histogram analysis of the signal, in particular taken from a luminance signal (*Col 8 Lines 58-59).*

Regarding Claim 3, Kawai teaches the method according to claim 1, characterized in that the input signal is compressed if a peak value of the input signal exceeds the output range. Fig. 2B shows the peak value of the input signal, which is at the end point exceed the output range which is 8 bit, so the signal is compressed to 8 bit which is output as seen in Fig. 2A.

Regarding Claim 4, Kawai teaches the method as claimed in claim 1, characterized in that the input signal is compressed with regard to a mere fraction of the image (*an input signal of Fig. 2A represents a fraction of an image)*..

Regarding Claim 5, Kawai teaches the method as claimed in claim 1, characterized in that the convex function is selected depending on the input range and/or the output range (*Fig. 4 shows that the convex function is changed depending on the end point which indicates the input range, or Fig. 2B shows different input ranges which affects the selected convex function).*

Regarding Claim 6, Kawai teaches the method as claimed in claim 1, characterized in that the convex function is formed by at least a first and a second part having a kneepoint as a point of intersection of the first and the second part wherein the first part of the convex function has an average steepness exceeding the average steepness of the second part. *(seen in Fig. 2B where the kneepoint is marked as start point).*

Regarding Claim 7, Kawai teaches the method as claimed in claim 6, characterized in that the kneepoint is located on the convex function at a specified kneelevel separating the first part and the second part (*also seen in Fig. 2B).*

Regarding Claim 10, Kawai teaches the method as claimed in claim 6, characterized in that the convex function is selected by varying the kneelevel of the convex function, in particular by simultaneously keeping the steepness of the second part constant (*as seen in Fig. 5).*

Regarding Claim 12, Kawai teaches the method as claimed in claim 6, characterized in that varying the steepness of the second part is selected if the input range of the input signal exceeds a pre-determined threshold level (*Fig.2B white clip level, and Fig. 6 and Col 5 Lines 57-64 teaches the inclination of the knee characteristic which directly varies the steepness is changed).*

Regarding Claim 13, Kawai teaches the method as claimed in claim 1, characterized in that the image signal comprises a number of components (*inherently an image signals comprises a number of components)*, in particular a luminance component (*Col 4 Line 3 teaches the signal is a luminance signal so it comprises at least a luminance component).*

Regarding Claim 14. The method as claimed in claim 13, characterized in that the image signal is formed by a Y-UV-signal or an RGB-signal (*it is well known to one of ordinary skill in the art that image signals are formed by a Y-UV signal or RGB signal, Kawai discloses application to color information in Col 6 Lines 25-30 which means the signal involves color components).*

Regarding Claim 15, Kawai teaches the method as claimed in claim 1, characterized in that the amount of dynamic range control processing is determined on a Y-signal (*Col 4 Line 3, a luminance signal)* , in particular a Y-signal derived from an R-, G- and B-component or determined on at least one component of an R-, G- or B-component (*one of ordinary skill in the art will recognize that a luminance signal is derived from at least one component of RGB, usually G).*

Regarding Claim 16, Kawai teaches the method as claimed in claim 1, characterized in that the input signal is a digital signal. Fig. 2A shows the input signal, the 12bit signal, is coming from the A/D converter which outputs a digital signal.

Regarding Claim 17, Kawai teaches the method as claimed in claim 16, characterized in that the digital signal is received from a white signal balancing module (*one of ordinary skill in the art will recognize that the knee control circuit is a white level compressing circuit so the digital signal received is from a white balancing circuit)* and, in particular, the output signal is applied to a gamma-control module (*Fig. 2A shows the output is applied to gamma control).*

Regarding Claim 18, Kawai teaches the method as claimed in claim 16, characterized in that an amount of compression range is commonly applied to all components of the image signal for dynamic range control processing and/or the

components are processed by means of a convex function common to all components of the image signal (*Fig. 2A the image signal is input for dynamic range control processing, particularly through reference number 8, the knee circuit which is shown in more detail in Fig. 2B, which shows an example of the compression range commonly applied to the input of Fig. 2A).*

Regarding Claim 30, Kawai teaches an imaging device (*Fig. 2A)* for signal reconstruction comprising a means for dynamic range control processing of an input image signal to generate an output image signal, the image device comprising: an input means for providing an input signal; a means for determining an amount comprising: a means for specifying an input range of the input signal, and a means for specifying an output range of the output signal; a computing means for selecting a convex function as a non-linear transfer characteristic capable of compressing the input signal according to the amount of dynamic range control processing; a processing means for transferring the input signal by means of the convex function; an output means for generating the output signal from the signal received by the processing means. See Figs. 2A and 2B, for further detail, the above limitations are addressed with Claim 1.

Regarding Claim 31, Kawai teaches the apparatus with a control circuit which inherently is run by a computer program. The limitations of which are addressed with Claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 8-9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al. (US 6141047) in view of Nakamura et al (US 5357279).

Regarding Claim 8, Kawai teaches the method as claimed in claim 6, characterized in that each of the first and the second part of the convex function is formed by a function, but fails to teach the first and second parts are each linear functions having a constant steepness. Nakamura however teaches a conventional knee control circuit where the first and second parts are linear functions each with a constant steepness.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Kawai with that of Nakamura to provide a simple compression where the known white level compression of the first part is linear until it exceed the knee point then the output is compressed at a lower slope.

Regarding Claim 9, Kawai teaches the method as claimed in claim 6, but fails the convex function is selected by varying the steepness of the second part, in particular

by simultaneously keeping the kneelevel constant. Nakamura teaches in Fig. 9 varying the steepness of the second part while keeping the knee level, K, constant.

It would have been obvious to one of ordinary skill in the art at the time of the invention to select a convex function by varying the steepness of the second part while keeping constant the knee point to provide an apparatus where the two variables, steepness and knee point, can be adjusted individually in order to provide a wider variety of signal processing states.

Regarding Claim 11, Kawai teaches the method as claimed in claim 6, characterized in that the convex function is selected depending on the input and/or the output range (*Fig. 2 shows the convex function varies depending on the ranges)*, and teachings of Kawai and also Kawai in view of Nakamura teach combinations of varying the steepness and varying the kneelevel for providing a wider variety of signal processing states.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kamishima et al. (US 6219097) teaches an image pickup apparatus where a level of an output signal from an image pickup device is detected.

Egawa et al. (US 6947087) teaches a solid state imaging device including unit cells for providing images without clipping from a small region to large signal region.

Hashimoto et al. (US 5221963) teaches a video camera with a detection circuit to detect a luminance distribution condition of a field.

Mori et al. (US 7088390) teaches a digital camera which can change gradation properties and exposure control mechanism.

Lee (US 6573934) teaches a digital correction of non-linearity using a piecewise linear approximation method to generate uniform errors of minimal magnitude.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy Hsu whose telephone number is 571-270-3012. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on 571-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amy Hsu
Examiner
Art Unit 2622

ARH 2/3/08

LIN YE
SUPERVISORY PATENT EXAMINER